

Aesthetic Dermatology Today

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Abstract: Facial ageing is a consequence of many interacting intrinsic and extrinsic factors. The most important of these include sun exposure or photo-ageing and the intrinsic changes associated with chronological ageing. Recent trends in cosmetics dermatology go towards non invasive procedures. Today there are many cosmetic dermatologic rejuvenation procedures that are used alone or in combination with each other. The latest and improved procedures used frequently are: Dermal Fillers, Botulinum Toxin, Face Rejuvenation Fractional Lasers, Mesotherapy and PRP.

Keywords: Esthetic dermatology, Face rejuvenation, Fillers, Botulinum Toxin, Laser, Mesotherapy, PRP

1. The Aim of Presentation

To understand, to know better and to improve the latest techniques of face rejuvenation procedures. A qualified dermatologist can significantly improve the condition of the skin and damages through the physiological aging using the latest techniques of rejuvenation and links together the science of dermatology and art.

The skin is the largest organ of the body and it is in a continuous change during the years. The skin is the mirror of the time that passes. Dermatology is the medical science that studies, prevents and treats the skin diseases. Esthetic dermatology doesn't only treat different pathologies of the skin but also treats and prevents physiological ageing and improves the quality of the skin.

Everywhere in the world esthetic procedures are applied in patients of different ages and in both females and males. Today there are many cosmetic dermatologic rejuvenation procedures applied. The quality of life is becoming more and more important during the last decade.

Wrinkles are the most obvious and perhaps the most disliked aspect of facial ageing.

Fine lines and wrinkles are signs of intrinsic or chronological ageing- there is no way to avoid them entirely. Facial lines and wrinkles may form as a result of numerous factors: Intrinsic and extrinsic ones. People can control some of these factors, especially extrinsic ones (UV exposure, smoking, bad diets, pollution).

Referring to some studies (1,2,3,4), as the skin ages there are some evident facts:

- The epidermis thins and the properties of the stratum corneum change. There is evident reduction of the barrier repair properties and decreased elasticity. These changes are important in causing fine lines.
- The elastic fiber network in the dermis degrades and is replaced by large, poorly organized deposits of elastin deep in the dermis.
- Collagen fibers become less organized and the collagen itself undergoes chemical changes that reduce its mechanical flexibility.

- Glucosaminoglycan composition changes.
- The subcutaneous fat layer especially in women decreases markedly in thickness. The supportive components of the skin are gradually destroyed. - collagen fibers degrade and their function is destroyed
- Gradual loss of hyaluronic acid (1,2,3,4), the extra factor that seems to be necessary in repeated movement of the skin, causing folding of the skin. One example of physiological ageing skin is the reduction in collagen fibers caused by physiological conditions such as the menopause (a decrease of one third of the skin's entire supply in approximately 3 years) or by exposure to UV radiation or tan beds and smoking. (5)

Cigarette smoking also plays an important contribution to wrinkling especially the wrinkles around the mouth. (6)

1-Dermal Fillers

In recent decades dermal filler substances consisting of highly viscous fluids or polymer particle suspensions have been injected beneath wrinkles and acne scars. The ideal soft tissue filler substance for wrinkles and skin defects:

- a- is biocompatible and safe
- b- is stable at the injection site
- c- keeps its volume and remains pliable
- d- does not cause protrusion of the skin or mucosa
- e -includes minimal foreign body reaction
- f- will not be removed by phagocytosis
- g- has no migration potential to distant locations
- h- does not cause foreign body granuloma . (7, 10)

In 1960 a form of liquid silicone was introduced but the number of complications was high. (8,9)

Nowadays, dermal fillers with hyaluronic acid are widely used. Hyaluronic acid is present in every tissue of the body and it is found in the extracellular matrix (ECM). Hyaluronic acid is a major constituent of the ECM itself. Hyaluronic acid looks moisture into the ECM and supports the structural integrity of the extracellular matrix. The extracellular matrix in the skin and mucosa, is composed of hyaluronic acid, combined with collagen and elastin fibers. Therefore, HA is essential for the structure of the extracellular matrix in skin and mucosa and important to ensure that the matrix has the ability to hold into its essential fluid. (7)

Hyaluronic acid injection can be used for correction of moderate to severe facial wrinkles and folds. It can be used to improve the skin's contour and reduce depressions in the skin due to acne, scars, injury or lines. Hyaluronic acid implantation is not permanent and usually lasts 6-9 months depending on the quality of the product used during the procedure. (7)

Safety of hyaluronic intradermal injections:

It is generally believed that injection of hyaluronic acid fillers is safe and does not trigger serious adverse reactions or allergic responses. (7,10,11) Despite the fact that there are no reported systemic side-effects local problems with cross linked hyaluronic acid have been described.(10) Complications can occur depending on the anatomic location of the injection, host factors, infectious processes and allergies and due to the intrinsic characteristics of any particular filler. Almost all studies report mild erythema, itching, swelling and pain that peaked within the first 72 hours and occasionally lasted for up to 10 days.(10,11) The use of hyaluronidase reduced patient's discomfort within 24 to 48 hours. (10) Injection pain was effectively reduced by using ice bags before injection or using lidocaine gel.



Figure 1: Photo before and after injection of Hyaluronic Acid (A Derma Clinic).

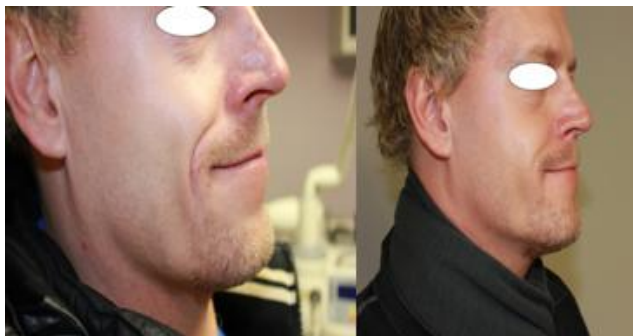


Figure 2: Application of Dermal Filler (A Derma Clinic).



Use of Hyaluronic Acid for the ageing lips:

As the time passes, the labial mucosa appears dehydrated, less elastic and less firm, with reduced definition between the vermilion border and the white lip. The lip treatment involving an important area both with regard to functional aspects and aesthetic considerations on the face, is perfectly in line with the actual tendency for natural looking.

Filling and volume enhancing products handled by well trained doctors, provide a noninvasive, discreet and usually very efficient solution.



Figure 3: Filler of the Lips (A Derma Clinic)

2. Botulinum Toxin

Botulinum Toxin (Type A) is a protein produced by the bacterium *Clostridium botulinum*. The effects of botulinum toxin have been known for more than a century, but it was not until 1980 when the toxin was found to be useful for a number of medical problems. Botox was first used by Carruthers on 1980 and the first study was published on 1990.(12)

Botulinum toxin is mainly used to treat wrinkles in the upper third of the face, although it is being increasingly utilized to treat hyper dynamic lines elsewhere. It is used for the treatment of lines located on: Platysma, orbicularis oris, décolleté, gingival smile, asymmetrical smile, hypertrophy of m.maseter, mentalis and depressor angulis oris, bunny lines, nasal tip drops. Changes in the upper third of the face are primarily related to chronic UV damage, to the intrinsic muscles of facial expression and their influence on the skin, and to gravitational changes from the loss of elasticity of the tissue. The forehead is undergoing constant dynamic stress from the frontalis, corrugator and procerus muscles. These muscles are constantly active in facial expression and convey frowning , scolding, surprise, and numerous other emotional states. BTX is a neuroplastic agent that blocks neuromuscular transmission. This produces weakness of the treated muscles.(13)

Injection of Botulinum Toxin is the main esthetic procedure used today and the reason for this is:

- Quick procedure
- Successful procedure
- Minimally invasive
- Few risks. (14)

The protocol of treatment: Botulinum Toxin injections 2 times a year; touch-ups after 7-10 days.

We have to be careful with injections between the period of 6 months : risk of autoanticorps. (15)

What do we need to take care of and to remember time after time:

- The anatomy of the face.
- Different patients are different.
- Sex of the patient.
- The group-population.
- The elasticity and turgor of the skin.(14)

Complications: are temporary and depend on the wrong technique used and wrong doses applied. The complications seen more often are: hematoma, ekimosis , asymmetry, ptosis palpebrale ,pain ,paralysis of lip area, disfagia and difficulties to turn the neck. (16,17 18)

We instruct subjects to remain vertical for 2-3 hours following treatment. During this time, while the toxin is binding they are instructed to frown and warned not to press or manipulate the treated area. After 7-10 days "touch-up" injections are performed if necessary. In patient with persistent deep resting furrows at follow-up, filling agents may be considered, although for the deeper furrows, injection of fillers will support the dermis and give an immediate enhancement of the esthetic benefit.

BTX -A is effective in diminishing the appearance of undesirable horizontal forehead lines, and the effects typically last for 6 months. Injection sites must be kept above the brow to avoid brow ptosis as well as loss of expressivity.



Figure 4: Before and after botox injection (A Derma Clinic).

3. Face Rejuvenation Fractional Laser

Fractional Laser is a non-ablative skin treatment, which improves skin tone, texture, wrinkles and hyperpigmentation without the downtime typically associated with ablative skin resurfacing treatments. Offering the most advanced fractional technology, this laser treats a wide range of skin conditions, including:

- Fine Lines and Wrinkles
- Age Spots / Sun Spots
- Melasma / Hyperpigmentation
- Acne Scars / Surgical Scars
- Stretch-marks
- Large pores
- Textural Irregularities

Fraxel laser treatments stimulate the production of healthy, new skin. The Fraxel laser uses unique fractional laser technology to create microscopic channels deep beneath the surface of the skin. As the skin begins to heal, the channels repair themselves by creating new collagen and healthy skin. Imperfections like brown spots, wrinkles and scar tissue are replaced with smooth, toned and more youthful looking skin.

Fraxel procedures are:

- 1.Safe
- 2.Comfortable (Cool air use)
3. No downtime necessary. (19)

Results are seen immediately and with the passing of time. After the treatment, the skin is softer and smoother, looks brighter and shows a more even tone. After 3-6 months the improvement will be higher because during this time the collagen fibers are moderated and new collagen has replaced the old one. (19).

Complications and Side Effects

Swelling, Burn, Redness, Erythema, Exfoliation, Peeling, Activation of Herpes. (19,20,21).

The number of treatments depends on the skin conditions and the patient's expectation.

After a Fraxel laser treatment, it is important to take extra special care of your skin.



Figure 5: Before and after just one treatment with fraxel laser. (A Derma Clinic).

4. Mesotherapy

Mesotherapy is derived from the Greek words "mesos" that means " middle" and "therapeia" that means to treat medically. It is a form of treatment that involves very little amount of mix substances injected into mesoderm, which is the embryonic middle layer located between the ectoderm and endoderm.

Different cocktails of concentrated vitamins, amino-acids, antioxidants, hyaluronic acid, coenzymes are injected to improve, nourish and to rejuvenate, to promote production of collagen and elastin and to stimulate metabolism. (15,16) Dull skin turns healthy and glowing. (22, 23).

Different protocols and different preparations are used. Besides the traditional needle-syringe combination, more sophisticated and more expensive instruments may be used, such as the mesotherapy gun. These guns electronically inject multiple points and allow a controlled amount and depth of application. The disadvantage of this system is the

difficulty in sterilizing the complete apparatus, because only the needle is disposable. (24)

Mesotherapy requires (25) :

- A sensible indication
- A correct clinical assessment
- Flawless technology
- Proper technique
- Suitable drug combinations

The mesotherapy improves: the quality of the skin, tonus, melasma, the vitality of the skin, fine lines. (22, 23)

5. PRP (Platelets Rich Plasma)

Platelet-rich plasma (PRP) is defined as a portion of the plasma fraction of autologous blood having a platelet concentration above baseline.(26) It contains multiple growth factors that may be beneficial in the different treatments by promoting collagen deposition. Lots of injections of the serum of the blood and some activator substance. Platelets of the individual serum + DNA activator (10% calcium chloride). PRP is quite efficient treatment and safe personal procedure.

Platelets part of this cocteil have an important role in cell turnover, in the turnover of the cells of the blood vessels and has got " growth factors". It is indicated in:

- Loss of the volume;
- Stretch mark;
- Wrinkles;
- Alopecia;
- Alopecia areata; Androgenetic Alopecia;
- Physiological ageing of the skin;
- Different scars, and acne scars.

Shn *et al.*, showed that a combination of fractional non-ablative laser therapy with topical application of PRP, resulted in objective improvement in skin elasticity, a lower erythema index and an increase in collagen density as well. Histological examination showed an increase in length of dermoepidermal junction, amount of collagen and fibroblasts in the treated skin. (27)

6. Results

885 patients were treated with different aesthetic procedures during the year 2013. 56% of the patients were treated with just one procedure and 44% of the patient applied more than one procedure during the whole year. The mean age of the patients treated was 42 years old (24 years old the youngest and 62 years old the eldest). Some side effects were experienced during different procedures but they were resolved after the following consultation. The results of the depth of wrinkles, tonus, elasticity, radiance, marks and scars were improved significantly to the patients that used more than one procedure.

7. Conclusions

Face rejuvenation procedures are safe and effective procedures that link closely a qualified dermatologist with art. The combination of different procedures through the

year gives better and more lasting results than applying just one procedure.

Today dermatologists are using safe and different dermo-esthetics procedures.

- The dermatologist has to make an individual plan for each patient.
- Start the antiage procedures earlier!
- Esthetic dermatology is not just a science but also art!

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